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TRENCHES TO REDUCE CHARGING EFFECTS AND TO CONTROL
OUT-OF-PLANE SENSITIVITIES IN TUNING FORK
GYROSCOPES AND OTHER SENSORS

ABSTRACT

Trenches which reduce or eliminate force and sensitivity associated with proof mass motion normal to the substrate as a result of voltage transients is disclosed. The trenches provide increased separation between interleaved comb electrodes and the substrate, and thereby also reduce the comb lift to drive ratio. The trenches are typically formed directly below the interleaved comb electrodes, but may also be formed below other suspended portions. Trench depth is from 6-10 microns and provides a comb electrode to substrate separation of approximately 8.5-12.5 microns.